

WHAT IS CLAIMED IS:

1. A system for handling tubular body sections at a drilling site comprising:
 - a drill platform having a derrick extending upwards therefrom, the drill platform and derrick defining a drill area;
 - a first hoist connected to an upper part of the derrick for passing a tubular body through a drilling opening defined in the drill platform;
 - at least one storage area being arranged within the drill area for storing a plurality of tubular lengths, each of the tubular lengths comprising at least two releasably interconnected tubular body sections;
 - at least one preparation opening extending through the drill platform at a location spaced from the drilling opening and from the at least one storage area;
 - a torquing tool for rotatably interconnecting tubular bodies at the at least one preparation opening to form tubular lengths;
 - 15 a first pipehandling device for transporting tubular bodies and tubular lengths from outside the drill area to the at least one preparation opening, said first pipehandling device having at least two separate gripping devices for independently gripping separate tubulars simultaneously; and
 - a second pipehandling device for transporting tubular lengths between the at least one preparation opening, the at least one storage area, and the first hoist.
- 25 2. The system according to claim 1, wherein the first pipehandling device comprises an axially rotatable vertical strut having at least two gripping arms for gripping tubular bodies and tubular lengths attached thereto.
3. The system according to claim 2, wherein the at least two gripping devices are further designed to hoist tubular bodies and tubular lengths vertically..
4. The system according to claim 2, wherein the at least two gripping devices 30 further comprise hoists capable of lowering each of the gripping devices outside the drill area to an outside tubular storage area.

5. The system according to claim 2, wherein each of said at least two gripping devices comprise at least two vertically aligned gripping arms arranged on the strut.

5 6. The system according to claim 1, wherein said at least two gripping devices are extendable radially outward from the axial center of the first pipehandling device.

10 7. The system according to claim 1, wherein the second pipehandling device comprises a gripping arm positioned adjacent to the at least one storage area, and wherein the gripping arm is rotatable about a vertical axis and laterally extendable.

8. The system according to claim 1, wherein the torquing tool is an iron roughneck.

15 9. The system according to claim 1, wherein the torquing tool is rotatable about a vertical axis and laterally extendable such that the torquing tool is capable of engaging tubular bodies or tubular lengths at both the at least one preparation opening and the drilling opening.

20 10. The system according to claim 1, wherein the at least one storage area is positioned between the drilling opening and the preparation opening.

25 11. The system according to claim 1, comprising at least two separate storage areas wherein the second pipehandling device is positioned between the at least two storage areas.

12. The system according to claim 1, further comprising a tubular ramp for transporting tubular bodies from a storage area outside the drill area to drill platform, wherein the first pipehandling device extends outward over the tubular ramp.

13. The system according to claim 1, wherein the derrick defines a first access opening through which the first pipehandling device may grip the tubular bodies from outside the drill area.

5 14. A method for manipulating tubular body sections at a drilling site comprising:
providing a tubular handling system comprising:

 a drill platform having a derrick extending upwards therefrom, the
 drill platform and derrick defining a drill area,

10 a first hoist connected to an upper part of the derrick for passing a
 tubular body through a drilling opening defined in the drill platform,

 at least one storage area being arranged within the drill area for
 storing a plurality of tubular lengths, each of the tubular lengths
 comprising at least two releasably interconnected tubular bodies,

15 at least one preparation opening extending through the drill
 platform at a location spaced from the drilling opening and from the at
 least one storage area,

 a torquing tool for rotatably interconnecting tubular bodies at the at
 least one preparation opening to form tubular lengths,

20 a first pipehandling device having at least two separate gripping
 devices for independently gripping separate tubulars simultaneously for
 transporting tubular bodies and tubular lengths from outside the drill area
 to the at least one preparation opening, and

25 a second pipehandling device for transporting tubular lengths
 between the at least one preparation opening, the at least one storage area,
 and the first hoist;

 transporting a plurality of tubular bodies from outside the drill area to the at least
 one preparation opening in a substantially vertical position by means of the at least two
 gripping devices of the first pipehandling device;

30 forming a tubular length by releasably interconnecting a plurality of tubular
 bodies with the torquing tool, while one of the tubular bodies extends through the
 preparation opening and another is suspended by means of one of the at least two

grippers of the first pipehandling device, and withdrawing the prepared tubular length from the preparation opening by means of said first pipehandling device;

transporting the prepared tubular length to the at least one storage area in a substantially vertical position by means of said second pipehandling device;

5 transporting tubular lengths from the storage area to the drilling opening in a substantially vertical position by means of said second pipehandling device, and

 releasably connecting said tubular lengths to the upper end of a drill stem suspended within the drilling opening with the torquing tool to form a completed drill stand, and successively lowering the drill stand through the drilling opening by means of
10 said first hoist.

15. The method according to claim 14, wherein said tubular length includes three tubular bodies, said tubular length being formed by arranging a first tubular body in the preparation opening with a first gripper device of the first pipehandling device so that a substantial part thereof extends below the drill platform, and including the steps of:

 holding a second tubular body above the upper end of the first body with the first gripper device of the first pipehandling device and connecting the two tubular bodies with the torquing device to form a double tubular;

20 lifting and rotating the double tubular out and away from the preparation opening with the first gripper device of the first pipehandling device;

 arranging a third tubular body in the preparation opening with a second gripper device of the first pipehandling device so that a substantial part thereof extends below the drill platform

25 thereafter holding the double tubular above the upper end of the interconnected first and second bodies with the first gripper device of the first pipehandling device and connecting the third tubular body to the interconnected first and second bodies with the torquing device.

30 16. The method according to claim 14, wherein said tubular length includes three tubular bodies, said tubular length being formed by a method including the steps of:

arranging a first tubular body section in a first preparation opening with the first gripper device of the first pipehandling device so that a substantial part thereof extends below the drill floor or platform,

5 arranging a second tubular body in a second preparation opening adjacent to the first preparation opening with the one of either the first gripper device of the first pipehandling device so that a substantial part thereof extends below the drill platform,

holding a third tubular body above the upper end of the second body with the second gripper device of the first pipehandling device and connecting the two tubular bodies with the torquing device; and

10 thereafter holding the interconnected second and third bodies above the upper end of the first body with either of the first or second grippers of the first pipehandling device and connecting the interconnected second and third bodies to the first body with the torquing device.

15 17. The method according to claim 14, wherein said tubular length includes three tubular bodies, said tubular length being formed by arranging a first tubular body in the preparation opening with a first gripper device of the first pipehandling device so that a substantial part thereof extends below the drill platform, and including the steps of:

20 holding a second tubular body above the upper end of the first body with a second gripper device of the first pipehandling device and connecting the two tubular bodies with the torquing device to form a double tubular;

lifting and rotating the double tubular out and away from the preparation opening with the first gripper device of the first pipehandling device;

25 arranging a third tubular body in the preparation opening with a second gripper device of the first pipehandling device so that a substantial part thereof extends below the drill platform

30 thereafter holding the double tubular above the upper end of the interconnected first and second bodies with the first gripper device of the first pipehandling device and connecting the third tubular body to the interconnected first and second bodies with the torquing device.

18. The method according to claim 14, further including the steps of:

disconnecting tubular lengths from the upper end of the drill string at the drilling opening with the torquing tool, while successively withdrawing the drill string upwards through the drilling opening, and

5 transporting the disconnected tubular lengths from the drilling opening to the storage area in a substantially vertical position by means of the second pipehandling device.

19. The method according to claim 14, further including the steps of:

10 transporting tubular lengths from the storage means to the first pipehandling device in a substantially vertical position by means of said second pipehandling means,

 lowering each tubular length through the at least one preparation opening by means of one of the at least two gripping devices of the first pipehandling means,

 retaining the tubular length in the at least one preparation opening,

15 successively releasing the interconnection between adjacent tubular bodies above the upper surface of the drill platform with the torquing tool, and

 transporting the released tubular bodies from the preparation opening by means of at least two of the at least two gripping devices of the first pipehandling device.

20 20. The method according to claim 14, wherein the tubular body is a drill string.

21. The method according to claim 14, wherein the tubular lengths comprise bottomhole assembly parts.

25 22. The method according to claim 14, wherein the tubular body is a well casing.

23. The method according to claim 14, wherein the tubular body is a production tubing.

30 24. The method according to claim 14, wherein the axial dimension of each of said tubular lengths corresponds substantially to the inner free height of the derrick.

25. The method according to claim 14, wherein the first pipehandling device comprises an axially rotatable vertical strut having at least two gripping devices thereon for gripping tubular bodies and tubular lengths attached thereto.

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26. The method according to claim 25, wherein the at least two gripping devices are further designed to hoist tubular bodies and tubular lengths vertically.

27. The method according to claim 25, wherein each of the at least two gripping devices further comprise a hoist capable of lowering the gripping device outside the drill area to an outside tubular storage area.

10 28. The method according to claim 25, wherein each of the at least two gripping devices are independently rotatable about the vertical strut.

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29. The method according to claim 25, wherein each of said gripping devices comprise at least two vertically aligned gripping devices arranged on the strut.

30. The method according to claim 25, wherein each of the said gripping devices 20 is extendable radially outward from the axial center of the first pipehandling device.

31. The method according to claim 25, wherein both of the said gripping devices are capable of lowering outside the drill area to an outside tubular storage area simultaneously.

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32. The method according to claim 14, wherein the second pipehandling device comprises a gripping arm positioned adjacent to the at least one storage area, and wherein the gripping arm is rotatable about a vertical axis and laterally extendable.

30 33. The method according to claim 14, wherein the torquing tool is an iron roughneck.

34. The method according to claim 14, wherein the torquing tool is rotatable about a vertical axis and laterally extendable such that the torquing tool is capable of engaging tubular bodies or tubular lengths at both the at least one preparation opening and the drilling opening.

35. The method according to claim 14, wherein the at least one storage area is positioned between the drilling opening and the preparation opening.

10 36. The method according to claim 14, comprising at least two separate storage areas wherein the second pipehandling device is positioned between the at least two storage areas.

15 37. The method according to claim 14, further comprising a third pipehandling device for transporting tubular bodies from a storage area outside the drill area to said first pipehandling device.

20 38. The method according to claim 14, further comprising a tubular ramp for transporting tubular bodies from a storage area outside the drill area to the drill platform, wherein the first pipehandling device extends outward over the tubular ramp.

39. The method according to claim 14, wherein the derrick defines a first access opening through which the first pipehandling device may grip the tubular bodies from outside the drill area.